

Serial No.: 10/678,693
Amendment dated: February 17, 2005
Reply to Office Action of: November 17, 2004
Atty. Docket No.: IJK-0329 (P2002J099)

LISTING OF CLAIMS

Claim 1. (currently amended) An integrated process for dewaxing a raffinate feedstock containing up to 20,000 ppmw sulfur and up to 1000 ppmw nitrogen which comprises: (a) contacting the feedstock with a hydrotreating catalyst under hydrotreating conditions to produce a hydrotreated feedstock and gaseous nitrogen- and sulfur-containing contaminants, and (b) passing at least a portion of the hydrotreated feedstock and gaseous components from step (a) without disengagement to a hydrodewaxing zone containing a ZSM-48 dewaxing catalyst ~~including at least one of ZSM-48, ZSM-22, ZSM-23, ZSM-5, ZSM-35, Beta, SSZ-31, SAPO-11, SAPO-31, SAPO-41, MAPO-11, ECR-42, synthetic ferrierites, mordenite, offretite, erionite, and chabazite~~ and hydrodewaxing the hydrotreated feedstock under hydrodewaxing conditions, said dewaxing catalyst including a metal hydrogenation component which is at least one Group 6 metal, at least one Group 8-10 metal, or mixtures of Group 6 and Group 8-10 metals, to form a hydrodewaxed product, and (c) passing at least a portion of hydrodewaxed product from step (b) without disengagement to a hydrofinishing zone containing a MCM-41 hydrofinishing catalyst and hydrofinishing under hydrofinishing conditions.

Claim 2. (original) The process of claim 1 wherein the hydrotreating conditions temperatures of 315 - 425°C, pressures of 2170 - 20786 kPa, Liquid Hourly Space Velocities (LHSV) of 0.1 - 10 and hydrogen treat rates of 89 - 1780 m³/m³.

Claim 3. (original) The process of claim 1 wherein the metal hydrogenation component is Pt, Pd or mixtures thereof.

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Claim 4. (original) The process of claim 1 wherein the hydrodewaxing conditions include a temperature of 360 to 425°C, hydrogen pressures of from 2859 to 20786 kPa, liquid hourly space velocities of 0.1 to 10 LHSV and hydrogen source velocities treat gas rates of from 53.4 - 1780 m³/m³.

Claim 5. (cancelled)

Claim 6. (cancelled)

Claim 7. (cancelled)

Claim 8. (currently amended) An integrated process for dewaxing a raffinate feedstock containing up to 20,000 ppmw sulfur and up to 1000 ppmw nitrogen which comprises: (a) contacting the feedstock with a hydrotreating catalyst under hydrotreating conditions to produce a hydrotreated feedstock and gaseous nitrogen- and sulfur-containing contaminants, (b) passing at least a portion of the hydrotreated feedstock and gaseous sulfur- and nitrogen-containing contaminants from step (a) without disengagement to a hydrodewaxing zone containing a ZSM-48 dewaxing catalyst ~~including at least one of ZSM-48, ZSM-22, ZSM-23, ZSM-5, ZSM-35, Beta, SSZ-31, SAPO-11, SAPO-31, SAPO-41, MAPO-11, BCR-42, synthetic ferrierites, mordenite, offretite, erionite, and chabazite~~ and hydrodewaxing the hydrotreated feedstock under hydrodewaxing conditions, said dewaxing catalyst including a metal hydrogenation component which is at least one Group 6 metal, at least one Group 8-10 metal, or mixtures of Group 6 and Group 8-10 metals, said hydrodewaxing zone also containing a second dewaxing catalyst wherein the second dewaxing catalyst is ~~tolerant of the sulfur and nitrogen-containing contaminants.~~ ZSM-5 or Beta and (c) passing at least a portion of hydrodewaxed

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product from step (b) without disengagement to a hydrofinishing zone containing a catalyst and hydrogen, and then to a MCM-41 hydrofinishing catalyst and hydrofinishing under hydrofinishing conditions.

Claim 9. (original) The process of claim 8 wherein the hydrotreating conditions temperatures of 315 - 425°C, pressures of 2170 - 20786 kPa, Liquid Hourly Space Velocities (LHSV) of 0.1 - 10 and hydrogen treat rates of 89 - 1780 m³/m³.

Claim 10. (original) The process of claim 8 wherein the metal hydrogenation component is Pt, Pd or mixtures thereof.

Claim 11. (original) The process of claim 8 wherein the hydrodewaxing conditions include a temperature of 360 to 425°C, hydrogen pressures of from 2859 - 20786 kPa, liquid hourly space velocities of 0.1 to 10 LHSV and hydrogen treat gas rates of from 53.4 - 1780 m³/m³.

Claim 12. (cancelled)

Claim 13. (cancelled)

Claim 14. (cancelled)

Claim 15. (currently amended) An integrated process for dewaxing a raffinate feedstock containing up to 20,000 ppmw sulfur and up to 1000 ppmw nitrogen which comprises: (a) contacting the feedstock with a ZSM-48 dewaxing catalyst ~~including at least one of ZSM-48, ZSM-22, ZSM-23, ZSM-5, ZSM-35, Beta, SSZ-31, SAPO-11, SAPO-31, SAPO-41, MAPO-11, ECR-42, synthetic ferrierites, mordenite,~~

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~~effettite, erionite, and chabazite~~ under hydrodewaxing conditions, said dewaxing zone containing a hydrodewaxing catalyst including a metal hydrogenation component which is at least one Group 6-10 metal, at least one Group 8-10 metal, or mixtures of Group 6 and Group 8-10 metals, to form a hydrodewaxed product, and (b) passing at least a portion of the hydrodewaxed product and gaseous components from step (b) without disengagement to a hydrofinishing zone containing a MCM-41 hydrofinishing catalyst and hydrofinishing the hydrodewaxed product under hydrofinishing conditions.

Claim 16. (original) The process of claim 15 wherein the metal hydrogenation component is Pt, Pd or mixtures thereof.

Claim 17. (original) The process of claim 15 wherein the hydrodewaxing conditions include a temperature of 360 to 425°C, hydrogen pressures of from 2859 - 20786 kPa, liquid hourly space velocities of 0.1 to 10 LHSV and hydrogen treat gas rates of from 53.4 - 1780 m³/m³.

Claim 18. (original) The process of claim 15 wherein the hydrofinishing conditions include temperatures of 150 - 350°C, pressures of 100 - 3000 psig (790 - 20786 kPa), LHSV of 0.1 - 20, and treat gas rates of 300 - 10000 scf/bbl (53 - 1780 m³/m³).

Claim 19. (cancelled)

Claim 20. (currently amended) An integrated process for dewaxing a raffinate feed which comprises: (a) solvent dewaxing the raffinate to form a raffinate and a slack wax, (b) deoiling the slack wax to produce a foots oil, (c) contacting the

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foots oil with a hydrotreating catalyst under hydrotreating conditions to produce a hydrotreated foots oil and gaseous nitrogen- and sulfur-containing contaminants, and (d) passing at least a portion of the hydrotreated foots oil and gaseous sulfur- and nitrogen-containing contaminants from step (c) without disengagement to a hydrodewaxing zone containing a ZSM-48 dewaxing catalyst including at least one of ZSM-48, ZSM-22, ZSM-23, ZSM-5, ZSM-35, Beta, SSZ-31, SAPO-11, SAPO-31, SAPO-41, MAPO-11, ECR-42, synthetic ferrierites, mordenite, offretite, erionite, and chabazite and hydrodewaxing the hydrotreated foots oil under hydrodewaxing conditions, said dewaxing catalyst including a metal hydrogenation component which is at least one Group 6 metal, at least one Group 8-10 metal, or mixtures of Group 6 and Group 8-10 metals to form a hydrodewaxed product, and (e) passing at least a portion of the hydrodewaxed product from step (d) without disengagement to hydrofinishing zone containing a MCM-41 hydrofinishing catalyst and hydrofinishing under hydrofinishing conditions.

Claim 21. (original) The process of claim 20 wherein the hydrotreating conditions temperatures of 315 - 425°C, pressures of 2170 - 20786 kPa, Liquid Hourly Space Velocities (LHSV) of 0.1 - 10 and hydrogen treat rates of 89 - 1780 m³/m³.

Claim 22. (original) The process of claim 20 wherein the metal hydrogenation component is Pt, Pd or mixtures thereof.

Claim 23. (original) The process of claim 20 wherein the hydrodewaxing conditions include a temperature of 360 to 425°C, hydrogen pressures of from 2859 - 20786 kPa, liquid hourly space velocities of 0.1 to 10 LHSV and hydrogen treat gas rates of from 53.4 - 1780 m³/m³.

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Claim 24. (cancelled)

Claim 25. (currently amended) The process of claim 20 wherein the dewaxing process of catalyst includes ZSM-48, slack wax or foots oil is blended with raffinate feed prior to step C.

Claim 26. (cancelled)

Claim 27. (cancelled)

Claim 28. (cancelled)

Claim 29. (cancelled)

Claim 30. (cancelled)

Claim 31. (cancelled)

Claim 32. (cancelled)

Claim 33. (cancelled)

Claim 34. (cancelled)

Claim 35. (cancelled)

Claim 36. (cancelled)

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Claim 37. (cancelled)

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